



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/654,768	09/04/2003	Peter J. Suttie	67,036-025; B05756-AT6	6696

26096 7590 03/08/2007  
CARLSON, GASKEY & OLDS, P.C.  
400 WEST MAPLE ROAD  
SUITE 350  
BIRMINGHAM, MI 48009

EXAMINER
----------

DESCHERE, ANDREW M

ART UNIT	PAPER NUMBER
----------	--------------

2836

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/08/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.



## DETAILED ACTION

### *Response to Amendment*

The amendment filed 1 December 2006 has amended claims 14 and 16. Examiner's rejection under 35 U.S.C. 112 is withdrawn.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 8, and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,278,262 ("Ulyott") and United States Patent 4,456,830 ("Cronin").

Ulyott discloses an APU system. A controller controls the rotational speed of the APU to match the steady-state rotational speed of a primary generator. The controller then connects the APU to both the load and primary generator and subsequently removes the primary generator (Abstract). The controller causes the APU to gradually accelerate when matching the frequency of the electrical generator (column 4, lines 14-19); the "controlled excursion" of the APU is shown in Figure 3 (column 3, lines 55-60). Electronic controller 26 is communicatively connected to breaker 22 for primary AC source 30 and APU controller 24 (Figure 1). The APU system may be used to provide back-up power to the electrical power system of an aircraft (column 1, lines 21-23).

Although Ulyott discloses a controlled acceleration of the APU, keeping the acceleration below a determined "rate limit" is not taught. Cronin teaches the use of logic schedules to

Art Unit: 2836

control the rate of change of frequency and voltage when bringing a generator up to speed (column 5, lines 46-62). This controlled rate of change while synchronizing an APU with a generator is stated by Cronin to be "well understood by those versed in the art". It would have been obvious to one of ordinary skill in the art at the time of the invention to limit the rate at which the APU of Ulliyott is accelerated in order to avoid mechanical stress and malfunction caused by overly rapid acceleration.

Claims 2, 11, and 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Ulliyott and Cronin in view of United States Patent 6,365,982 ("Iles"). Ulliyott discloses an APU system with frequency and speed matching according to a primary generator, but does not teach the use of a look-up table that corresponds target APU speed with APU frequency. Iles teaches that a look-up table may be used with an engine. The look-up table matches a desired speed with a frequency. The speed to be set is linked to an engine operating state, such as idle (Abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a look-up table in the invention of Ulliyott so that gradual, controlled acceleration of an APU may be implemented in a system using discrete control.

Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Ulliyott and Cronin in view of United States Patent 5,303,541 ("Goff"). Ulliyott discloses an APU system with frequency and speed matching according to a primary generator, but does not teach the use of a fuel schedule in operating the APU. Goff teaches an APU using a fuel schedule to maintain a proper fuel to air ratio, providing a proper operating speed of the APU (column 1, lines 41-61). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a

Art Unit: 2836

fuel schedule in the invention of Ulliyott to maintain the gradual acceleration when matching the frequency of the electrical generator.

Claims 5, 6, 10, 15, 17, and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Ulliyott in view of United States Patent 6,472,774 ("Bedouet"). Ulliyott discloses an APU system with frequency and speed matching according to a primary generator that provides power to a load once the APU speed has been increased to a set level (Ulliyott, column 1, lines 46-58), but does not teach that a load device may be shut down during power transfer. Bedouet teaches a device for energy management, particularly drawn to supplying electrical equipment on an aircraft (Bedouet, column 1, lines 6-11). Certain events, such as a loss of engine power, starting of engines, or a partial system failure, may reduce available electric power in an aircraft. In such an event, the device carries out load shedding, removing electrical power from components least critical to the operation of the aircraft (column 1, lines 21-38). A combination of Ulliyott and Bedouet would provide load shedding during starting of engines (power transfer). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the APU system with the load shedding of Bedouet to provide a high level of security to the aircraft and its passengers by prioritizing and shedding loads when a reduced electrical power level is available (column 2, lines 17-27).

Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Ulliyott, Iles, and Bedouet. See rejection of claims 2 and 5 above.

Claims 3 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Ulliyott, Cronin, and Bedouet. See rejection of claims 1 and 5, and 9 and 10 above.

***Response to Arguments***

Applicant's arguments filed 1 December 2006 have been fully considered but they are not persuasive.

In regard to claims 1, 8, and 9, the Applicant argues that substituting the controlled rate of Cronin into the invention of Ulyott would not meet the claims, but has provided no indication as to what features are missing in the Examiner's rejection. The Applicant further argues that the substitution "would require the entire detailed operation of Ulyott be abandoned". The Examiner respectfully traverses. Since Ulyott merely teaches that the APU is accelerated "gradually" by its controller (column 4, lines 14-19), the Examiner contends that the teachings of Cronin could be used in the invention of Ulyott to control the rate of this gradual acceleration.

In regard to claims 2, 11, and 13, the Applicant argues that there is no suggestion to use a look up table in the combination of Ulyott and Cronin. The Examiner respectfully traverses. It would be obvious to one of ordinary skill in the art to utilize a look-up table, such as that taught by Iles, in a discrete motor control system. Since the teachings of Ulyott and Cronin provide no insight as to the inner workings of their controllers, it would be reasonable to utilize the controller teachings of Iles to provide a look-up table for determining output frequencies.

Applicant's arguments filed 1 December 2006 with respect to claims 5, 6, 10, 15, 17, and 18 have been fully considered and are persuasive. The rejections of claims 3, 5-7, 10, 12, 15, 17, and 18 have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Bedouet.

***Allowable Subject Matter***

Art Unit: 2836

Claims 14 and 16 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: in regard to claims 14 and 16, the prior art suggests gradual adjustment of APU speed.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew M. Deschere whose telephone number is (571) 272-8391. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AMD

  
BRIAN SIRCUS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800